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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,029

08/01/2006

Yuichi Shibazaki

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25944 7590 09/03/2008

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EXAMINER

RUTLEDGE, DELLA J

ART UNIT

PAPER NUMBER

2851

MAIL DATE

DELIVERY MODE

09/03/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,029	<b>Applicant(s)</b> SHIBAZAKI, YUICHI	
	<b>Examiner</b> Della J. Rutledge	<b>Art Unit</b> 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 45-89 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 44-54, 57-67, 70-78 and 80-89 is/are rejected.
- 7) ☒ Claim(s) 55, 56, 68, 69 and 79 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/07, 02/07 (two), 04/07, 05/07, 12/07, 07/08</u> .          | 6) <input type="checkbox"/> Other: _____                          |



## **DETAILED ACTION**

### ***Preliminary Amendment***

1. The Preliminary Amendment filed on August 1, 2006 has been "entered".

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

3. The drawings filed on August 1, 2006 are acceptable for the examination of this application.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 44 –46, 48 49, 51, 52, 62, 70 -72, 74 – 77, 80 – 82, 84 – 87, 89 are rejected under 35 U.S.C. 102(e) as being anticipated by Binnard (US Pub. No. 2006/0023186).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome

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either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In regard to **Claim 44**: In figures 5A, 5B, the immersion lithography apparatus of Binnard has ***a stage drive method in which a first stage*** WS1 **and a second stage** WS2 **are independently with an area in a two dimensional plane of a predetermined range including a first area where liquid 312 is locally supplied and a second area located on one side of the first area in a first axis direction x; wherein**

**During a transition from a first state in which one stage of the first and the second stage** (WS1 and WS2, respectively) **is positioned at the first area** (directly under the projection system) **to a second stage are simultaneously driven in a second axis direction y intersecting the first axis direction while one of a state where the first stage and the second stage are close together in the second axis direction and a stage where the first stage and the second stage are contact in the second axis direction is maintained.** The reference states that Figs 5A and 5B are a twin substrate stage arrangement which is structured in accord with the twin stage arrangement of Loopstra et al. (US Pat. No. 6,262,796, this reference was also cited by the applicant). In the Loopstra et al. reference the first and second stages are driven independently by linear motors which during a transition from a first state in which one or the other of the stages is in the first area to a second state where the stages are in

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contact or close together in a second axis direction that intersects the first axis direction.

See paragraph 0045.

In regard to **Claim 45**: the Loopstra et al. reference discloses that the actuators are detachable as claimed. See Figures 3, 4 of Loopstra et al.

In regard to **Claims 46, 49, 72, 82, 87**: paragraph 0045 of Binnard discloses that the liquid is maintained below the optical assembly during the time that the stages WS1 and WS2 are to be swapped.

In regard to **Claim 48**: Binnard has the first and second stages driven by the method claimed and a third area located on the other side of the first area as claimed. See figures 5A, 5B and related text.

In regard to **Claims 51 and 52**: Binnard has the stage unit claimed and the control unit, not shown with this embodiment of the invention, is inherent. See Figs. 5A, 5B.

In regard to **Claims 62, 75-77** : Binnard has the stages and transition arrangement claimed in figures 5A and 5B. Paragraph 0029 states that the actuators, motors, may be linear.

In regard to **Claims 70, 71, 80, 81, 85, 86**: Binnard uses a pad 222 to suppress the leakage of the liquid; see paragraph 0045. The pad 222 acts as a seal member.

In regard to **Claims 74, 84, 89**: Binnard has the device manufacturing method claimed. See paragraphs 0051 for the device manufacturing steps disclosed.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims **47, 50** are rejected under 35 U.S.C. 103(a) as being unpatentable over Binnard et al. (US Pub. No. 2006/0023186).

The measuring arrangement of the two mirror on the stages is not shown in Binnard, but is a commonly used arrangement in the lithographic art for aligning the substrate, and would be recognized by one of ordinary skill in the art as a good choice for the alignment of the substrate in the Binnard apparatus.

8. Claims 53, 54, 57- 59, 63 – 67, 73, 78, 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Binnard et al. (US Pub. No. 2006/0023186).

In regard to **Claims 53, 54, 66, 78, 83, 88**: Binnard et al. has the basic apparatus, but does not disclose details for the alignment system. Using alignment marks located on the substrate stage or substrate in well known arrangement in the art and would readily have been used by one of ordinary skill in the art with the Binnard et al. exposure apparatus. Both of the stages in the apparatus may be used to mount a substrate.

In regard to **Claim 57- 59**: Binnard et al. disclose using a pad 222 to suppress leakage of the liquid when the first and second stage are close together in the transition. The pad 222 acts as a seal member. During the transition liquid continues to be held in the space as claimed, See paragraph 0045.

In regard to **Claims 63 – 67, 73**: one of ordinary skill in the art would have used a measurement or alignment system with the Binnard exposure apparatus and the means

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claimed are those commonly found in the art and would have been good choice readily selected by one of ordinary skill in the art.

In regard to **Claim 61**: the Binnard et al, apparatus uses the device manufacturing method claimed. See paragraph 0051 for the manufacturing steps.

9. Claims 44, 47, 48, 50, 54, 60, 75, 78, 83, 74, 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakamoto et al. (JP 2003-249443) in view of Kono (JP 07-335748).

The claims do not involve an inventive step over Wakamoto et al. in combination with Kono. Wakamoto et al. discloses all the features of these claims except that an exposure method of the liquid permeation type is not used. However, as disclosed in Kono, such a method is well known. One of ordinary skill in the art would use a liquid immersion method to improve the resolution of small patterns with the apparatus of Wakamoto et al.

10. Claims 2, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakamoto et al. (JP 2003-249443) in view of Kono (JP 07-335748) as applied to claims 44, 47, 48, 50, 54, 60, 75, 78, 83, 74, 84 above, and further in view of Loopstra et al. (WO 1998/040791).

These claims do not involve an inventive step over Wakamoto et al. in combination with Kono and Loopstra et al. Loopstra et al. discloses an exposure device comprising a



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dual wafer stage, where the two stages and a linear actuator for driving the stages can be engaged detachably. Using a drive mechanism such as in Loopstra et al., in the exposure device of Wakamoto et al., is merely a design modification that could have been readily achieved by a person of ordinary skill in the art.

11. Claims 62 - 67 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakamoto et al. (JP 2003-294443) in view of Kono (JP 07-335748) as applied to claims 44, 47, 48, 50, 54, 60, 75, 78, 83, 74, 84 above, and further in view of Taniguchi et al. (EP 1041357).

These claims do not involve an inventive step over Wakamoto et al. in view of Kono and The Taniguchi et al. discloses an exposure device that is provided with a wafer stage and a measurement stage, wherein the two stages can be driven independently. Replacing one stage in the exposure device of Wakamoto et al. with a measurement stage, such as discloses in Taniguchi et al. is merely a design modification that could easily have been by person of ordinary skill in the art.

### ***Allowable Subject Matter***

12. Claims 55, 56, 68, 69 and 79 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter: the prior does not disclose an exposure apparatus having a part of the upper

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end portion in one stage of the first stage and the second stage on the side facing the other stage is a plate shaped hangover portion protruding over other portion and a step portion as claimed.

***Response Data***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Della J. Rutledge whose telephone number is (571) 272-2127. The examiner can normally be reached on Mon - Thurs, 6:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Della J. Rutledge/  
Primary Examiner  
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